

the friendly side of the FPL. The best way to obtain grazing fire that covers the platoon front is to place machineguns near the platoon flanks. The platoon leader should place a grenadier on the FPL side of the M60 to cover any deadspace along the line and an M249 on the other side to provide fires to protect the M60. The assistant gunner absolutely *must* walk the FPL while the gunner makes the range card.

One of the major reasons our platoons have not been using their M60s properly is that a change to the tables of organization and equipment (TOEs) removed some important personnel. To correct this deficiency, every rifle platoon should be authorized a weapons squad, and every M60 crew should have an ammunition bearer. (The rifle platoons in Ranger battalions have both weapons squads and ammunition bearers, and their machinegun crews are among the most proficient in the Army.)

During squad training, the weapons squad leader could train the M60 crews on machinegun tasks while the platoon leader and platoon sergeant supervised the platoon's overall training. During field operations, the weapons squad leader could assist the platoon leader with all aspects of machinegun employment, allowing the platoon leader more time for his other tasks.

The greatest advantage to having an ammunition bearer on a machinegun crew would be that the young soldier assigned to the job could train as a crew member and become the next assistant gunner.

To ensure success during the next conflict, our platoons must improve upon their machinegun employment. Achieving this improvement will require several steps:

- Leadership training (Infantry Officer Basic Course, Primary Leadership Development Course, and the like)

should include in-depth classes that prepare leaders to train and employ their machinegun crews better.

- The crews should strive to fire off the tripod at every opportunity.

- The crews must understand how to use the T&E mechanism, and crew drill should become second nature to them.

If airborne, air assault, and light infantry rifle platoons learn to employ their M60 machineguns properly, they will realize all of the potential combat power these organic weapons have to offer.

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# Known-Distance Marksmanship

## The Key to Increasing Combat Performance

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Since the early 1970s when the Army adopted the M16A1 rifle and the current rifle qualification system, known-distance firing has all but disappeared from Army marksmanship training schedules. Known-distance firing, originally intended as an integral part of the current Army qualification system, was dropped to conserve resources. This is unfortunate, because it has severely limited the soldier's potential to achieve the combat marksmanship skills he needs to attain decisive victory with his primary wea-

pon. In recent years, however, known-distance firing has been making a comeback among infantry trainers and light infantry commanders.

The merits of known-distance firing can be understood best from a historical perspective. Known-distance firing has a long tradition both as a military training tool and as a vehicle for recreational competition. These traditions often muddy thinking with emotion, and longstanding habits stifle creativity and intuition. If we are to revisit known-

distance firing, we must briefly review its original purpose, then redefine it by breaking it down into its essential elements.

### The Rise and Fall

As a military training tool, known-distance firing was the culmination of marksmanship training. It was, in effect, qualification for the soldier. Its importance was due to two factors:

The first was the development of repeating rifles and cartridges that had

the precision and the power to enable a skilled marksman to consistently hit targets at extended ranges. To exploit the capabilities of these rifles, the soldier had to increase his ability to aim the rifle. Next he had to understand the effects of trajectory, wind, and weather on the ultimate impact of the bullet. Known-distance firing accomplished these training objectives. Once the soldier's skills more closely matched the increased capabilities of his primary weapon, the combat power of infantry formations increased dramatically, and the tactical formations of the day changed profoundly.

The second influence was the urbanization of the United States during the industrial revolution. When this was a rural society, the Army could take it for granted that its conscripts had some familiarity with firearms. The migration of millions to the cities invalidated this assumption, and a formal system of weapon training was introduced, with known-distance firing as the centerpiece.

At about the same time, known-distance firing became an increasingly popular form of recreation, and the Army did much to encourage this, as did some civilian organizations. Although the courses of fire have evolved since then, their origins are still easily recognizable as oriented on military marksmanship skills, albeit skills that have fallen into disuse.

Thus, known-distance firing, from its beginning, has been the basis of recreation, a tool for training the unskilled, and a vehicle for making the most of human marksmanship skill in order to realize the full potential of the rifle as an infantry weapon.

The demise of known-distance firing in the Army was not totally illogical. The first thing that diminished the benefits of known-distance marksmanship training was the increase in the power and number of weapons of mass destruction. The first and most important of these was artillery, with armor soon to follow. Close air support is a more recent addition. Weapons of mass destruction denied the infantry the opportunity to engage targets at maxi-

mum distance; they created confusion on the battlefield, broke up and destroyed infantry formations at distances beyond the maximum effective range of infantry weapons. The industrial revolution, which had first given the infantry soldier an advantage in firepower, had now deprived him of that advantage.

Infantry tactics therefore had to be modified. It no longer made sense for infantrymen to engage targets at the maximum effective range of their own weapons because they were still out-ranged and outgunned. This was part of the folly of the active defense and of medium antitank weapons such as the Dragon. This new battlefield usually denied the infantrymen shots beyond 300 meters. Instead, they had to close with the enemy and engage him with overwhelming firepower at distances

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***The essential elements of known-distance firing are precision marksmanship, combat distance, multiple shots, and feedback on the position of each shot.***

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shorter than the maximum range of his (the enemy's) or their (the infantrymen's) weapons. Organization, planning, and leadership in the midst of the chaos of the battlefield became more important than the individual or collective ability of infantrymen to shoot at maximum range.

The second factor was the development of the assault rifle, which was designed in part with the modern battlefield in mind. The U.S. Army's first assault rifle was the M16A1 (actually the result of an evolution process beginning with the M1 Garand and the M14). Armed with the M16, an infantry soldier could carry more ammunition. The M16 round had a flat trajectory out to 300 meters but lost accuracy and power beyond that range.

Theoretically, this flat trajectory eliminated the need to adjust the sights out to ranges of 300 meters, and beyond that point it was irrelevant. At shorter

ranges the M16 offered the luxury of greater firepower thus allowing infantrymen to achieve a decisive firepower advantage at the critical moment. The advantage of a higher rate of fire—as opposed to fewer, better-placed shots—is debatable. Still, the new M16A1 seemed well suited to the battlefield and to the tactical philosophy of the day.

Finally, the Army adopted a way of zeroing the M16 at reduced distance—25 yards—by using the long-range rear aperture and then flipping to the combat range aperture. A 25-yard zero obtained by this method theoretically equaled a zero at 250 yards, and zeroing at reduced range was easier than zeroing at 250 yards. This was called “obtaining a battlesight zero.”

With the elimination of the need to adjust sights due to trajectory—combined with the fact that a combat zero no longer needed to be confirmed at combat distance—the way was clear for the elimination of known-distance firing from Army marksmanship training. A soldier could move directly from the 25-yard zero range to the qualification range, where he would shoot at pop-up targets without ever having to move his sights. It became quicker, easier, and cheaper to eliminate known-distance firing because the two compelling reasons for it no longer existed.

The final reasoning behind the decision to eliminate known-distance firing was economy. The Army proposed to save the training time, terrain and infrastructure, ammunition, and money required to maintain known-distance training, then to convert these resources to programs and weapons that could offer more tangible results in deterring and stemming the chief threat. In short, known-distance firing fell into decline because the importance of the rifle as the primary infantry weapon also fell into decline.

The new method of zeroing and qualification did not represent an improvement; instead, it seemed to be a mandate for mediocrity. Marksmanship training lost almost all the benefits that known-distance firing had offered. Since that time, such training aids as the Weaponeer

Weaponer have come into the system as economical attempts to recapture some of what had been lost.

With this understanding of the origin and the decline of known-distance firing, we can now define it in a way that will help us understand its continuing value as a training tool.

### **The Elemental Parts**

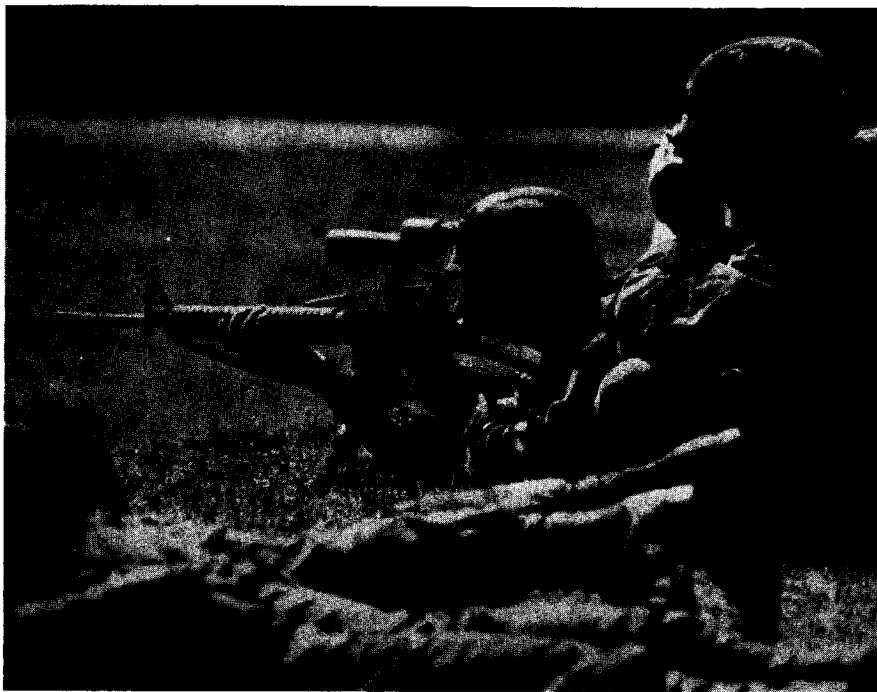
Known-distance firing is precision marksmanship training conducted at standard engagement ranges, firing multiple (at least five) shots, at a target on which the position of each shot can be marked.

It doesn't matter what the target looks like—bull's eye, silhouette, or camouflage silhouette—or whether it has scoring rings or areas. It doesn't matter whether the soldier fires some standard number of shots beyond the minimum (although a standard course of fire together with targets with graded scoring areas will provide a mechanism for quantitative analysis of performance). It doesn't even matter whether the soldier fires at more than one range (although combat zero range is by far the best). All of these variables should ultimately be controlled to create an optimum condition for training, but they are all ancillary to the central elements of good known-distance training.

The essential elements of known-distance firing are precision marksmanship, combat distance, multiple shots, and feedback on the position of each shot.

**Precision Marksmanship.** In precision firing, the soldier is using his sights and is trying to hit the target—in other words, applying the fundamentals of marksmanship. This generally implies single-shot firing before receiving downrange feedback, but firing multiple shots can be better for the novice shooter. And multiple shots can tell the advanced firer everything he needs to know and get him off the range quickly.

**Combat Distance.** Combat distances are the distances at which typical engagements are expected to occur. For the Army's M16, 50 meters to 300 meters are qualification distances. Battlesight zero distance is the best since it



**Coaching can provide the shooter with feedback, the most important element of known-distance firing.**

represents the most favorable distance for the M16 design. Battlesight zero is 250 yards for the M16A1 and 300 meters for the M16A2.

Realistic training for engagements at shorter ranges is likely to involve precision techniques other than those mentioned earlier. Furthermore, precision firing at short distance does not challenge

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***Known-distance firing is the only complete tool for skill development at combat ranges.***

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the firer's skill, nor does it indicate the rifle's true performance potential.

Firing at distances beyond 500 meters is not considered tactically feasible, as the effects of such variables as wind and mirage increase dramatically. As a result, performance becomes erratic. Even so, long distance firing can be a great confidence-builder for soldiers who have solid marksmanship skills. If wind conditions are right (calm and steady), excellent results can be

achieved at ranges up to 600 meters and even 1,000 meters with the M16A2. Hours later, however, as conditions become changeable, the same exercise may prove disappointing.

**Multiple Shots.** Multiple shots are necessary to verify performance. The minimum of five shots mentioned earlier is arbitrary, but it does serve to point out that ten shots are usually unnecessary while three are barely enough to form a picture of the way the firer and the rifle are performing. If after five shots the shot groupings are scattered, there is a problem with either the shooter or the weapon. Wind also has this effect, but it is more obvious since all firers on the range are usually affected the same way.

**Feedback.** The most important element of known-distance firing is downrange feedback—that is, the act of marking each shot. This gives the soldier the information he needs to evaluate his skill as a marksman. It allows him to associate his actions with the rifle with the positioning of shots down range. This feedback also demonstrates the validity of his 25-yard battlesight zero. The confirmation of battlesight zero is not something that can be taken for

granted, either for elevation or for windage. Feedback also demonstrates the effects of wind on the strike of the bullet. Finally, when the soldier engages a target at a different range, it demonstrates the real effect of trajectory on the strike of the bullet. Theoretically, the bullet strike should remain within a silhouette at all distances out to 300 meters; this is questionable at the shorter distances, though, and may be entirely invalid if the battlesight zero is incorrect.

The big benefit in marking the individual shot holes is feedback. Knowing whether a shot is a hit or a miss is not good enough. The soldier must have more specific information if he is to improve his ability to aim the rifle, execute the shot, keep a valid zero, and make slight adjustments to compensate for the effects of wind and, if he needs it, for trajectory. It should be noted, however, that at qualification distances, a soldier makes adjustments for wind and elevation by adjusting his point of aim, not by manipulating the rifle sights.

### Transition vs. Skill Development

In the past, known-distance firing was considered a transition between the 25-yard zero and qualification. The sequence was first zero, then transition, then qualification. But the term *transition* sold short the merits of known-distance firing. When the Army decided to cut marksmanship training resources, transition was the obvious choice. Apparently, the idea was that although we need a beginning and an end, the middle was expendable.

Known-distance firing is not the expendable middle. It is not transition for the sake of transition. Known-distance firing offers feedback on performance, zero, wind, and trajectory. Neither 25-yard zero nor qualification offers any of these to any real extent. Known-distance is the only complete tool for skill development at combat ranges. Better terms for the proper sequence of marksmanship training are *zeroing*, *skill development firing*, and *qualification*. The term *known-distance firing* describes the method of training, but *skill development* describes the goal

of that training.

Since the decision to eliminate known-distance firing as a required part of Army qualification was influenced by economics, now that the world picture has changed so radically, the Army may be persuaded to reinvest in marksmanship some of the training resources it took away. The first step in that direction should be to reestablish known-distance firing as a required part of qualification.

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# Physical Disability Review System

## Taking Care of Your Soldiers

CAPTAIN M. NICHOLAS COPPOLA

If you are a new commander, you may find that your unit has several soldiers on limiting physical profiles and awaiting medical boards. Your first impulse may be to try to have these soldiers reassigned to the local medical holding company so you can get others in the same specialties to replace them. When you do, you will be introduced to the Army's physical disability review system—and to another important

aspect of taking care of your soldiers.

Thousands of soldiers or their medical records appear before medical review boards each year. Unless they are severely injured or sick and require hospitalization for more than 90 days, or come from overseas assignments, they remain on duty with their parent units until the disability review process is complete. Moving these soldiers to medical holding companies, which often

requires permanent changes of station, would cost the Army a lot of money, create unnecessary stress for their families, and hinder the soldiers in establishing relationships with agencies such as the Army Career Alumni Program and the Transition Assistance Program, that can help them transition into new careers. In addition, medical treatment facilities cannot support permanent changes of station for all the soldiers